

General

Title

Gastroenteritis admission rate (area-level): rate per 100,000 population.

Source(s)

AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 4.2]. Appendices. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 61 p.

AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 4.2]. PDI #16 gastroenteritis admission rate. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 3 p.

McDonald K, Romano P, Davies S, Haberland C, Geppert J, Ku A, Choudhry K. Measures of pediatric health care quality based on hospital administrative data: the pediatric quality indicators. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Sep. 130 p. [82 references]

Measure Domain

Primary Measure Domain

Population Health

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the [Measure Validity](#) page.

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the number of patients admitted for gastroenteritis per 100,000 population in Metro Area* or county.

*The term "metropolitan area" (MA) was adopted by the U.S. Census in 1990 and referred collectively to metropolitan statistical areas

(MSAs), consolidated metropolitan statistical areas (CMSAs) and primary metropolitan statistical areas (PMSAs). In addition, "area" could refer to either 1) FIPS county, 2) modified FIPS county, 3) 1999 OMB Metropolitan Statistical Area or 3) 2003 OMB Metropolitan Statistical Area. Micropolitan Statistical Areas are not used in the QI software.

Rationale

This indicator is intended to identify hospitalizations for gastroenteritis, where gastroenteritis is identified as the principal reason for hospitalization. Timely and effective care for gastroenteritis, such as oral rehydration therapy, may reduce the need for hospitalization.

Primary Clinical Component

Pediatric gastroenteritis; hospital admission rates

Denominator Description

Population 3 months to 17 years in Metro Area or county

Numerator Description

All non-maternal discharges ages 3 months to 17 years with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal diagnosis code for gastroenteritis

OR

With secondary diagnosis code of gastroenteritis and a principal diagnosis code of dehydration

Exclude cases:

- Transfer from a hospital (different facility)

- Transfer from Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)

- Transfer from another health care facility

- Neonates if age in days is missing

- With any diagnosis code of gastrointestinal abnormalities and bacterial gastroenteritis

- Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium)

Note: Refer to the original measure documentation for specific ICD-9-CM codes. See also the *Pediatric Quality Indicators Appendices*.

Evidence Supporting the Measure

Evidence Supporting the Value of Monitoring the Aspect of Population Health

A formal consensus procedure involving experts in relevant clinical, methodological, and organizational sciences

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

Need for the Measure

Need for the Measure

Variation in health state(s)

Evidence Supporting Need for the Measure

Billings J, Zeital L, Lukomnik J, Carey T, Blank A, Newman L. Analysis of variation in hospital admission rates associated with area income in New York City [unpublished].

Millman M. Committee on monitoring access to personal health care services. Washington (DC): National Academy Press; 1993.

Murray MD, Stang P, Tierney WM. Health care use by inner-city patients with asthma. J Clin Epidemiol. 1997 Feb;50(2):167-74. [PubMed](#)

State of Use of the Measure

State of Use

Current routine use

Current Use

Monitoring health state(s)

Application of Measure in its Current Use

Care Setting

Ambulatory Care

Community Health Care

Professionals Responsible for Health Care

Advanced Practice Nurses

Physician Assistants

Physicians

Public Health Professionals

Lowest Level of Health Care Delivery Addressed

Counties or Cities

Target Population Age

Age greater than or equal to 3 months and less than 18 years

Target Population Gender

Either male or female

Stratification by Vulnerable Populations

Unspecified

Characteristics of the Primary Clinical Component

Incidence/Prevalence

Unspecified

Association with Vulnerable Populations

John Billings' original study from New York reported 1.87-fold variation in gastroenteritis hospitalization rates for ages 0 to 64, with a coefficient of variation of 0.438 and 22% variance explained by household income. Millman et al. reported that low-income zip codes in New York had 1.9 more pediatric gastroenteritis hospitalizations per capita than high-income zip codes in the same 11 states in 1988. Similarly, a retrospective analysis of the 1995-96 cohort of infants born in Western Australia showed that aboriginal infants were hospitalized for gastroenteritis 8 times more frequently and readmitted 2.7 times more frequently than their non-Aboriginal peers. These findings suggest that this indicator may be a marker for access to outpatient care.

Evidence for Association with Vulnerable Populations

Billings J, Zeital L, Lukomnik J, Carey T, Blank A, Newman L. Analysis of variation in hospital admission rates associated with area income in New York City [unpublished].

Gracey M, Lee AH, Yau KK. Hospitalisation for gastroenteritis in Western Australia. Arch Dis Child. 2004 Aug;89(8):768-72. [PubMed](#)

Millman M. Committee on monitoring access to personal health care services. Washington (DC): National Academy Press; 1993.

Burden of Illness

Unspecified

Utilization

See the "Association with Vulnerable Populations" field.

Costs

Unspecified

Institute of Medicine (IOM) Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Timeliness

Data Collection for the Measure

Case Finding

Both users and nonusers of care

Description of Case Finding

Population 3 months to 17 years in Metro Area or county

Denominator Sampling Frame

Geographically defined

Denominator Inclusions/Exclusions

Inclusions

Population 3 months to 17 years in Metro Area or county

Exclusions

Unspecified

Relationship of Denominator to Numerator

All cases in the denominator are not equally eligible to appear in the numerator

Denominator (Index) Event

Patient Characteristic

Denominator Time Window

Time window is a single point in time

Numerator Inclusions/Exclusions

Inclusions

All non-maternal discharges ages 3 months to 17 years with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal diagnosis code for gastroenteritis

OR

With secondary diagnosis code of gastroenteritis and a principal diagnosis code of dehydration

Exclusions

Exclude cases:

- Transfer from a hospital (different facility)

- Transfer from Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)

- Transfer from another health care facility

- Neonates if age in days is missing

- With any diagnosis code of gastrointestinal abnormalities and bacterial gastroenteritis

- Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium)

Note: Refer to the original measure documentation for specific ICD-9-CM codes. See also the *Pediatric Quality Indicators Appendices*.

Measure Results Under Control of Health Care Professionals, Organizations and/or Policymakers

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

Numerator Time Window

Institutionalization

Data Source

Administrative data

Level of Determination of Quality

Does not apply to this measure

Type of Health State

Adverse Health State

Pre-existing Instrument Used

Unspecified

Computation of the Measure

Scoring

Rate

Interpretation of Score

A lower score is desirable

Allowance for Patient Factors

Analysis by high-risk subgroup (stratification on vulnerable populations)

Analysis by subgroup (stratification on patient factors, geographic factors, etc.)

Risk adjustment method widely or commercially available

Description of Allowance for Patient Factors

Risk adjustment of the data is recommended using, at minimum, age and sex.

Application of multivariate signal extraction (MSX) to smooth risk adjusted rates is also recommended.

Standard of Comparison

Internal time comparison

Evaluation of Measure Properties

Extent of Measure Testing

The development of the Agency for Healthcare Research and Quality (AHRQ) Pediatric Quality Indicators utilizes a four pronged approach: identification of candidate indicators, literature review, empirical analyses, and panel review. Candidate indicators were identified through both published literature and a brief survey of national organizations. Literature review provided descriptions and evaluations of some candidate indicators and the underlying relationship to quality of care. Empirical analyses were conducted to explore alternative definitions; to assess nationwide rates and hospital variation; and to develop appropriate methods to account for variation in risk. Clinical panel review helped to refine indicator definitions and risk groupings, and to establish face validity in light of the limited evidence from the literature for most pediatric indicators. Information from these sources was used to specify indicator definitions and make recommendations to AHRQ regarding the best indicators for inclusion in the pediatric indicator set.

A structured review of each indicator was undertaken to evaluate face validity (from a clinical perspective). This process mirrored that undertaken during the initial development of the Patient Safety Indicators. Specifically, the panel approach established *consensual validity*, which "extends face validity from one expert to a panel of experts who examine and rate the appropriateness of each item..." The methodology for the structured review was adapted from the RAND/UCLA Appropriateness Method and consisted of an initial independent assessment of each indicator by clinician panelists using an initial questionnaire, a conference call among all panelists, followed by a final independent assessment by clinician panelists using the same questionnaire. The panel process served to refine definitions of some indicators, add new measures, and dismiss indicators with major concerns from further consideration.

Empirical analyses were conducted to provide the clinical panels and peer review participants with additional information about the indicators. These analyses were also used by the development team to test the alternative specifications and the relative contribution of indicator components in the numerator and denominator. These analyses were not intended to inform issues of precision, bias and construct validity, which will be addressed separately. The data source used in the empirical analyses was the 2003 Kids' Inpatient Sample (KID).

Refer to the original measure documentation for additional details.

Evidence for Reliability/Validity Testing

Fitch K, Bernstein SJ, Aguilar MS, Burnand B, LaCelle JR, Lazaro P, van het Loo M, McDonnell J, Vader J, Kahan JP. The RAND/UCLA appropriateness method user's manual. Santa Monica (CA): RAND; 2001. 109 p.

Green L, Lewis F. Measurement and evaluation in health education and health promotion. Mountain View (CA): Mayfield Publishing Company; 1998.

McDonald K, Romano P, Davies S, Haberland C, Geppert J, Ku A, Choudhry K. Measures of pediatric health care quality based on hospital administrative data: the pediatric quality indicators. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Sep. 130 p. [82 references]

Identifying Information

Original Title

PDI #16 gastroenteritis admission rate.

Measure Collection Name

Agency for Healthcare Research and Quality (AHRQ) Quality Indicators

Measure Set Name

Pediatric Quality Indicators

Submitter

Agency for Healthcare Research and Quality - Federal Government Agency [U.S.]

Developer

Agency for Healthcare Research and Quality - Federal Government Agency [U.S.]

Funding Source(s)

Agency for Healthcare Research and Quality (AHRQ)

Composition of the Group that Developed the Measure

The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators are in the public domain and the specifications come from multiple sources, including the published and unpublished literature, users, researchers, and other organizations. AHRQ as an agency is responsible for the content of the indicators.

Financial Disclosures/Other Potential Conflicts of Interest

None

Endorser

National Quality Forum - None

Adaptation

This measure was adapted from the Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators.

Parent Measure

Pediatric gastroenteritis admission rate (PQI 6) (Agency for Healthcare Research and Quality [AHRQ])

Release Date

2006 Feb

Revision Date

2010 Sep

Measure Status

This is the current release of the measure.

This measure updates a previous version: AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 4.1]. PDI #16 gastroenteritis admission rate. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2009 Dec 1. 2 p.

Source(s)

AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 4.2]. Appendices. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 61 p.

AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 4.2]. PDI #16 gastroenteritis admission rate. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 3 p.

McDonald K, Romano P, Davies S, Haberland C, Geppert J, Ku A, Choudhry K. Measures of pediatric

Measure Availability

The individual measure, "PDI #16 Gastroenteritis Admission Rate," is published in "Measures of Pediatric Health Care Quality Based on Hospital Administrative Data: The Pediatric Quality Indicators" and "AHRQ Quality Indicators. Pediatric Quality Indicators: Technical Specifications." These documents are available in Portable Document Format (PDF) from the [Pediatric Quality Indicators Resources](#)

page at the Agency for Healthcare Research and Quality (AHRQ) Quality Indicators Web site.

For more information, please contact the QI Support Team at support@qualityindicators.ahrq.gov.

Companion Documents

The following are available:

AHRQ quality indicators. Pediatric quality indicators: software documentation, SAS [version 4.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 45 p. This document is available in Portable Document Format (PDF) from the [AHRQ Quality Indicators Web site](#)

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AHRQ quality indicators. Software documentation: Windows [version 4.1a]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Jul 2. 97 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#) .

AHRQ quality indicators. Pediatric quality indicators composite measure workgroup. Final report. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Mar. Various p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#) .

AHRQ quality indicator. Comparative data for the PDI based on the 2008 Nationwide Inpatient Sample (NIS) [version 4.1b]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 20 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#)

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AHRQ quality indicators: composite measures user guide for the pediatric quality indicators (PDI) [version 4.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2010 Sep. 6 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#)

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HCUPnet: a tool for identifying, tracking, and analyzing national hospital statistics. [Web site]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); [accessed 2010 Jan 4]. HCUPnet is available from the [AHRQ Web site](#) .

See the related [QualityTools](#)

summary.

NQMC Status

This NQMC summary was completed by ECRI Institute on December 28, 2007. The information was verified by the measure developer on March 31, 2008. This NQMC summary was updated by ECRI Institute on June 25, 2010. This NQMC summary was reviewed and edited by ECRI on July 15, 2011.

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